N-Channel Enhanced MOSFET

➢ Features

VDS	VGS	RDSON Typ.	ID
40V	±20V	5.8mR@10V	52A
		7.2mR@4V5	

➢ Description

This device is N-Channel enhancement MOSFET. Uses advanced trench technology and design to provide excellent RDSON with low gate charge. This device is suitable for use in DC-DC conversion, power switch and charging circuit.

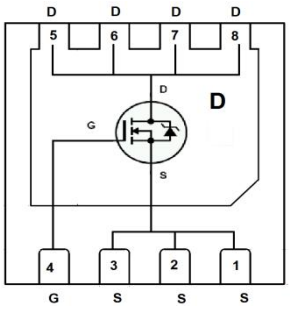
➢ Applications

- DC/DC converters
- Power supplies
- Motor Drive Control
- Synchronous rectification

➢ Ordering Information

Device	Package	Shipping
SSC8140GQ4	DFN3X3	5000/Reel

➢ Pin configuration



Bottom View

Marking

(Y: product year / W: product week)

➢ Absolute Maximum Ratings(T_A=25℃ unless otherwise noted)

Symbol	Parameter		Ratings	Unit
V_{DSS}	Drain-to-Source Voltage		40	V
V_{GSS}	Gate-to-Source Voltage		±20	V
I_D	Continuous Drain Current [d]	T_C=25℃	52	A
		T_C=100℃	24	
I_{DSM}	Continuous Drain Current [a]	T_A=25℃	20	A
		T_A=70℃	13	
I_{DM}	Pulsed Drain Current [b]		200	A
P_D	Power Dissipation [c]	T_C=25℃	26	W
		T_C=100℃	10	
P_{DSM}	Power Dissipation [a]	T_A=25℃	3.9	W
		T_A=70℃	2.5	
I_{AS}	Avalanche Current [b] L=0.5mH Single Pulse		32	A
E_{AS}	Avalanche Energy [b] L=0.5mH Single Pulse		256	mJ
T_J	Operation junction temperature		-55~150	℃
T_{STG}	Storage temperature range		-55~150	

➢ Thermal Resistance Ratings(T_A=25℃ unless otherwise noted)

Symbol	Parameter	Ratings	Unit
$R_{\theta JA}$	Junction-to-Ambient Thermal Resistance [a]	32	℃/W
$R_{\theta JC}$	Junction-to-Case Thermal Resistance	4.7	

Note:

a. The value of $R_{\theta JA}$ is measured with the device mounted on 1 in^2 FR-4 board with 2oz.copper, in a still air environment with T_A=25℃.The value in any given application depends on the user is specific board design. The power dissipation is based on the t≤10s thermal resistance rating.

b. Repetitive rating, pulse width limited by junction temperature.

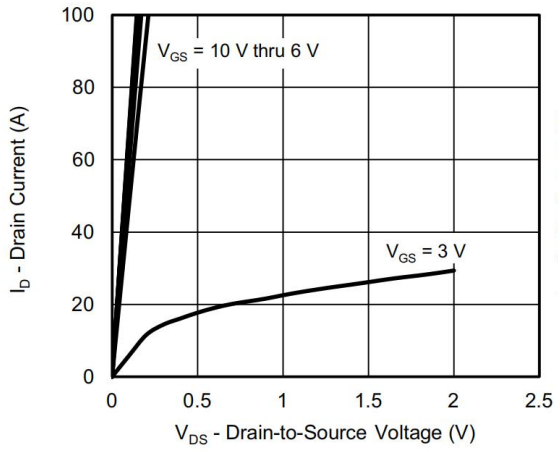
c. The power dissipation P_D is based on $T_{J(MAX)}$=150°C, using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heat sinking is used.

d. The maximum current rating is package limited.

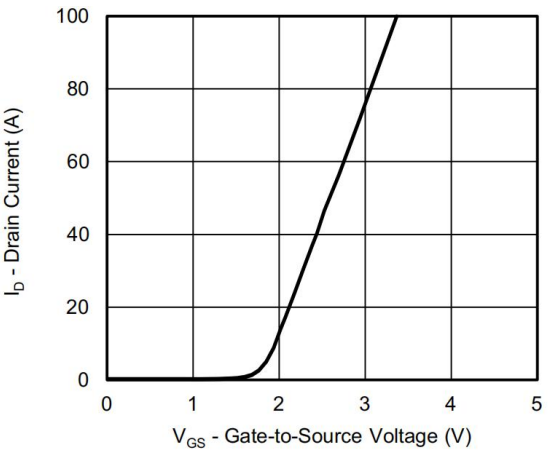
➢ **Electronics Characteristics**(T_A=25℃ unless otherwise noted)

Symbol	Parameter	Test Conditions	Min	Typ.	Max	Unit
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	VGS=0V ,ID=250uA	40			V
$V_{GS\ (th)}$	Gate Threshold Voltage	VDS=VGS ,ID=250uA	1	1.5	2	V
$R_{DS(on)}$	Drain-Source On-Resistance	VGS=10V , ID=20A		5.8	8	mR
		VGS=4.5V , ID=10A		7.2	10	
I_{DSS}	Zero Gate Voltage Drain Current	VDS=40V ,VGS=0V			1	uA
I_{GSS}	Gate-Source leak current	VGS=±20V ,VDS=0V			±100	nA
G_{FS}	Transconductance	VDS=5V ,ID=20A		27		S
V_{SD}	Forward Voltage	VGS=0V , IS=5A		0.74	1.3	V
Ciss	Input Capacitance	VDS=20V , VGS=0V, f=1MHz		3030		pF
Coss	Output Capacitance			353		
Crss	Reverse Capacitance			272		
$T_{D(ON)}$	Turn-on delay time	VGS=10V, RL=1R VDS=20V , RG=3R		10		ns
Tr	Rise time			5		
$T_{D(OFF)}$	Turn-off delay time			23		
Tf	Fall time			7		
Q_G	Total Gate Charge	VGS=10V, VDS=20V ID=20A		42		nC
Q_{GS}	Gate Source Charge			10		
Q_{GD}	Gate Drain Charge			5		
Trr	Diode Recovery Time	IF=20A , di/dt=500A/us		16		ns
Qrr	Diode Recovery Charge	IF=20A , di/dt=500A/us		38		nC

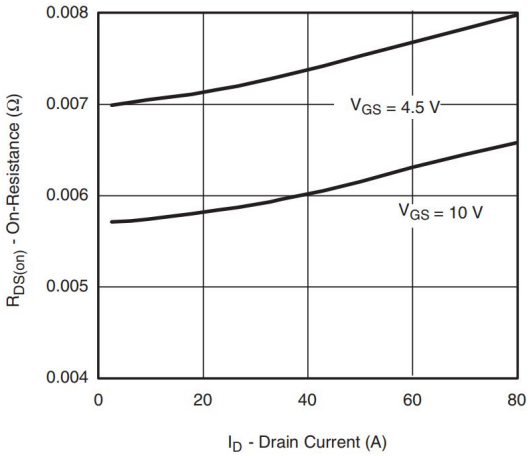
➢ Typical Characteristics(T_A=25℃ unless otherwise noted)



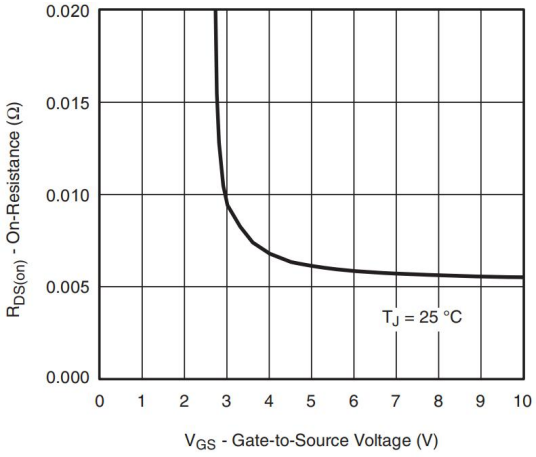
Output Characteristics



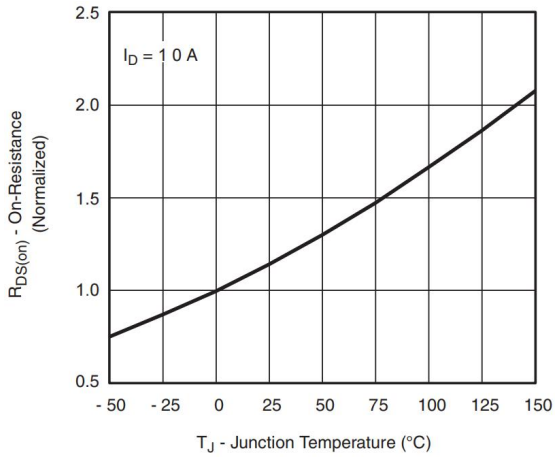
Transfer Characteristics



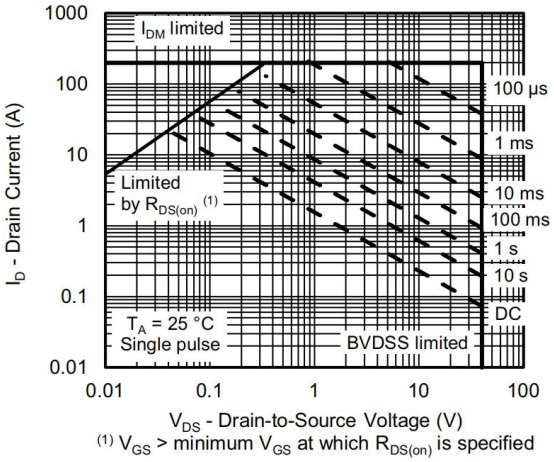
On-Resistance vs. Drain Current and Gate Voltage



On-Resistance vs. Gate-to-Source Voltage

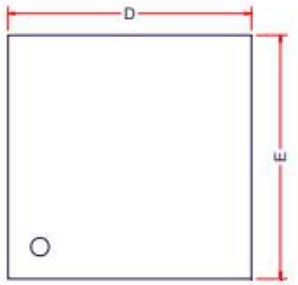


On-Resistance vs. Junction Temperature

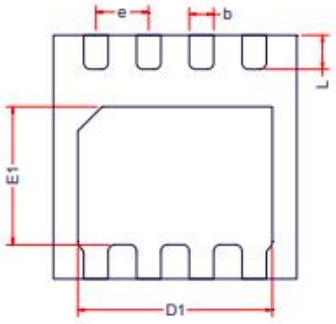


Safe Operating Area, Junction-to-Ambient

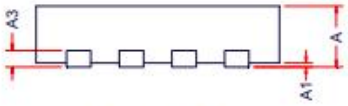
➢ Package Information



TOP VIEW



BOTTOM VIEW



SIDE VIEW

Package：DNF3X3-8L

Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.70	0.75	0.80
A1	0.00	0.02	0.05
A2		0.20Ref	
D	2.90	3.00	3.10
E	2.90	3.00	3.10
D1	2.35	2.40	2.45
E1	1.65	1.70	1.75
b	0.25	0.30	0.35
e		0.65BSC	
L	0.37	0.42	0.47

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